

# Algebra II Trig Review 13.4 – 13.6

Name Key

Convert each degree measure to radian measure, exact answers.

1.  $18^\circ = \frac{\pi}{10}$       unit circle      2.  $45^\circ = \frac{\pi}{4}$

unit circle      3.  $120^\circ = \frac{2\pi}{3}$

$\frac{18^\circ}{360^\circ} = \frac{x}{2\pi}$   
 $\frac{36\pi}{360} = \frac{\pi}{10}$

Convert each radian measure to degree measure. Round to the nearest tenth.

unit circle      4.  $\frac{\pi}{6} = 30^\circ$       unit circle      5.  $\frac{2\pi}{3} = 120^\circ$

rad      6.  $3.4 = 195^\circ$   
 $\frac{3.4}{2\pi} = \frac{x^\circ}{360}$

Evaluate each expression. Give exact answers. UNIT CIRCLE

7.  $\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$   
 x

8.  $\tan \frac{3\pi}{4} = -1$   
 $\frac{y}{x} = \frac{-\sqrt{2}/2}{\sqrt{2}/2}$

9.  $\sin 2\pi = 0$   
 y

10.  $\sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$   
 y

Arc length.

A circle has a diameter of 24 inches. For each central angle measure, find the length of the intercepted arc.

11.  $\frac{\pi}{6}$  radians      2π inches  
 $r = 12 \text{ in}$   
 $s = r \cdot \theta$   
 $12 \cdot \frac{\pi}{6} = 2\pi$

12. 7.2 radians      86.4 inches  
 $s = r \cdot \theta$   
 $12 \cdot (7.2)$

V. Identify the amplitude, period, horizontal shift, and vertical shift. If none, say so.

13.  $y = \sin 2(\theta + 23^\circ) + 5$   
 amp. 1 period 360 = 180°  
 horiz. -46° vert. +5

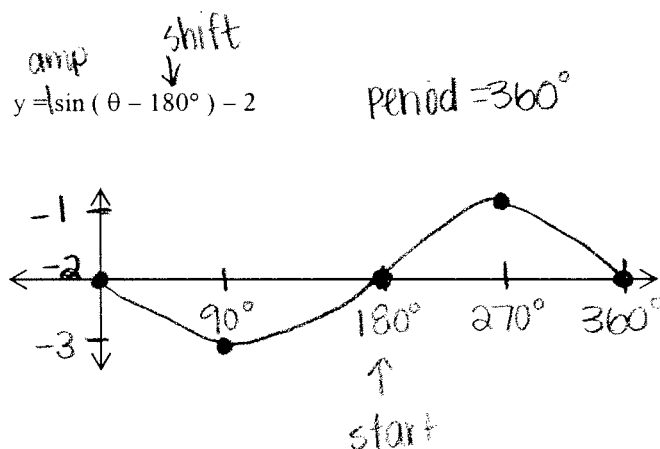
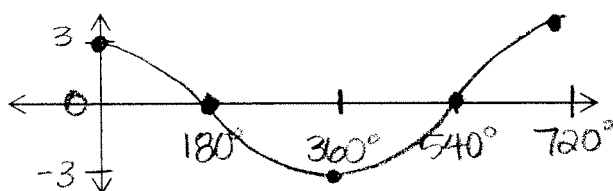
14.  $y = 7 \cos (2\theta) - 4$   
 amp. 7 period 360 = 180°  
 horiz. none vert. -4

15.  $y = 5 + 3 \sin (\frac{1}{2}\theta)$   
 amp. 3 period 720 = 360 \cdot 2  
 horiz. none vert. +5

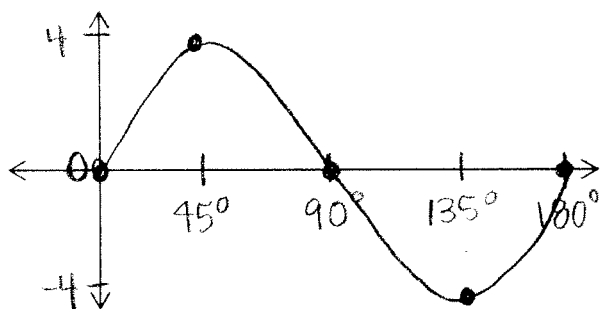
Graph one period of the function and label key points.

16.  $y = 3 \cos \frac{1}{2}\theta$       Period =  $\frac{360}{1/2} = 720^\circ$

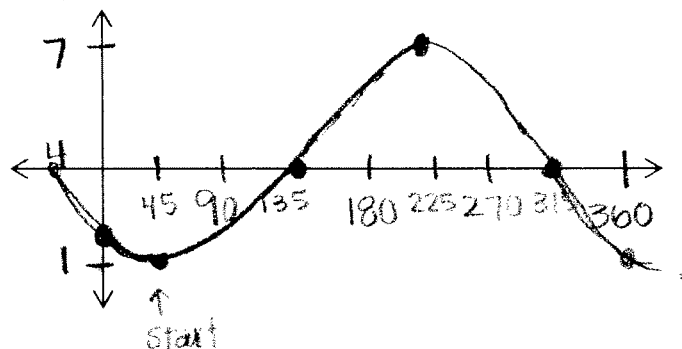
17.  $y = \sin (\theta - 180^\circ) - 2$       period = 360°



18.  $y = 4 \cos 2(\theta - 90^\circ)$   
 $4 \cos(2\theta - 180^\circ)$   
 Amp  $\downarrow$   
 Period  $= \frac{360}{2} = 180^\circ$

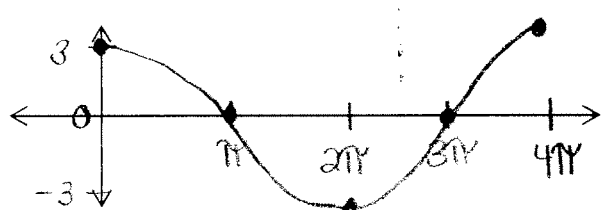


19.  $y = -3 \cos(\theta - 45^\circ) + 4$  up  
 Amp  $\downarrow$  start  
 opposite  
 Period  $= 360$

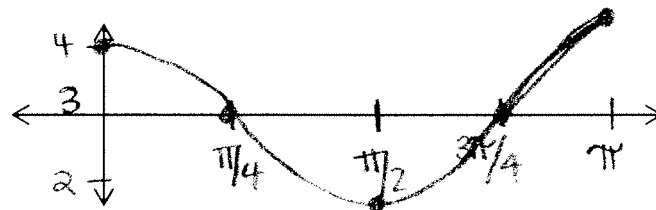


Graph one period of the function in radians and label key points.

20.  $y = 3 \cos \frac{1}{2}x$   
 Period  $= \frac{2\pi}{1/2} = 4\pi$



21.  $y = \cos(2x) + 3$  Period  $= \frac{2\pi}{2} = \pi$



The temperature in an air-conditioned office on a hot day can be modeled by the equation  $T = 3 \cos\left(\frac{\pi x}{12}\right) + 71$ , where  $x$  is the time in minutes after the air conditioner is turned on and  $T$  is the temperature.

22. How long does the air conditioner run after being turned on? 12 minutes

Period  $= \frac{2\pi}{\pi/12} = \frac{2\pi}{\pi} \cdot 12 = 24$

23. What is the highest temperature in the office? 74°

$71 + 3 = 74^\circ$

24. What is the lowest temperature? 68°

$71 - 3 = 68^\circ$

